

MACHINE PARTS MADE OF HIGH TOUGHNESS CASE HARDENING STEEL AND THEIR PRODUCTION

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Applicant: KOBE STEEL LTD; NISSAN MOTOR

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- European:

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Abstract of JP9053148

PROBLEM TO BE SOLVED: To provide machine parts made of high toughness case hardening steel, excellent in wear resistance, fatigue characteristic, and impact resistance, at a low cost by applying carburizing and quenching to steel parts containing specific amounts of C, Si, Mn, P, S, Cr, Al, and N.
SOLUTION: Steel parts, prepared by using a steel stock which has a composition consisting of, by mass, 0.1-0.25% C, $\leq 0.15\%$ Si, $> 1.20-2.0\%$ Mn, $\leq 0.02\%$ P, $\leq 0.02\%$ S, $> 0.70-1.50\%$ Cr, 0.015-0.060% Al, 0.005-0.030% N, and the balance Fe with inevitable impurities and containing, if necessary, prescribed amounts of Mo, Ni, Cu, V, Ti, Nb, and Ca, is subjected to carburizing and quenching or to carbonitriding and quenching. By this procedure, the total area ratio of martensite and bainite in the core part, the area ratio of martensite, and pro-eutectoid ferrite are regulated to $\geq 95\%$, $\leq 90\%$, and $\leq 5\%$, respectively. Further, the grain size number of austenitic crystal grains in the carburized layer or carbonitrided layer is regulated to No. 8 or above, and also the amount of retained austenite in the part between the surface and a position at a depth of 0.05mm from the surface is regulated to 10-50%.

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